EXPLANATION

Sandstone

Calcareous sandstone

Siltstone

Sandy siltstone

Clay shale or claystone

Calcareous clay shale or claystone

Clay ironstone

Coal or carbonaceous material

Bentonite

Limestone

Cored interval

No samples recovered

● Oil show

☼ Gas show

vf Very fine grained

f Fine grained

m Medium grained

BIT SYMBOLS

DRILL BITS

OSC-3 Hughes OSC-3

SHO Security hole opener

G-3R Grant 3-point reamer

R-2 Reed 2

DDT Smith DDT

2C Reed 2C

CORE BITS

K-24 Reed K-24 hard formation

K-25 Reed K-25 soft formation

Location: Lat 69°34′N, Long 153°18′W
Elevation: Kelly bushing 340 feet, Ground 324 feet
Spudded: January 26, 1952
Completed: April 18, 1952
Total depth: 987 feet
Status: Plugged and abandoned

Drilling and engineering data compiled from records of Arctic Contractors

Electric log by Schlumberger Well Surveying Corporation

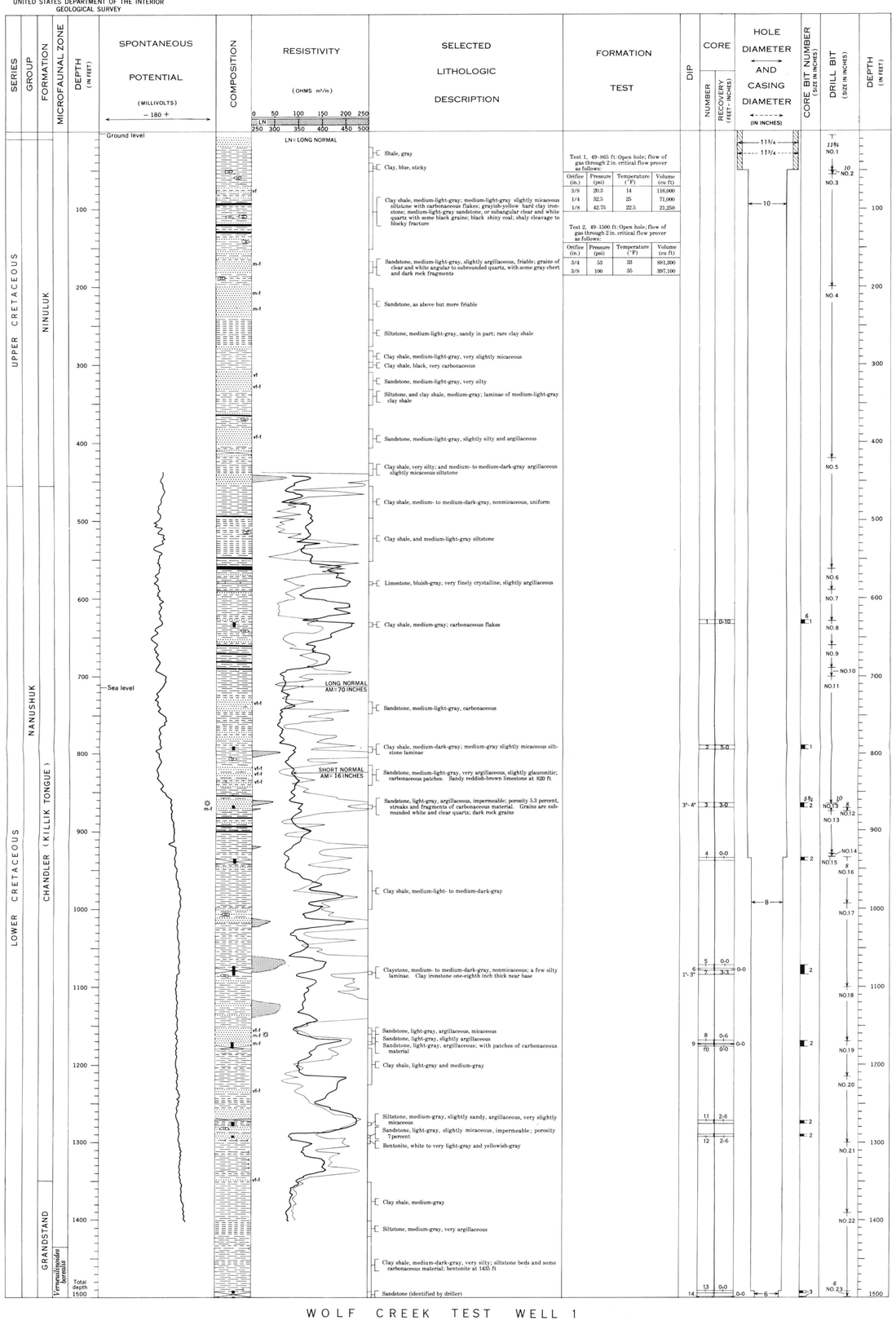
All depths are measured from the top of the kelly bushing

Colors were determined by comparison of dry samples with the National Research Council Rock Color Chart, 1948

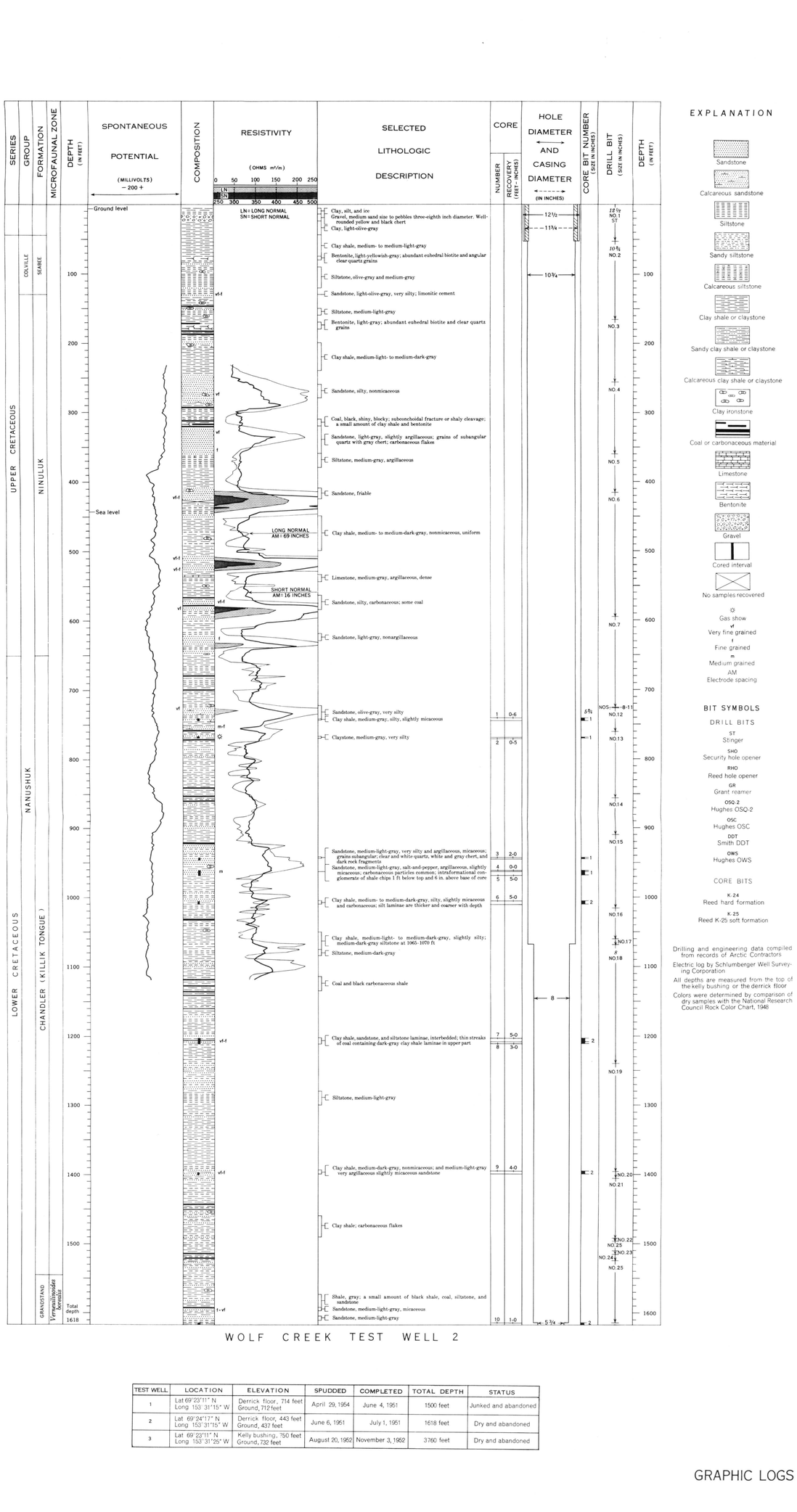
GRAPHIC LOG OF SQUARE LAKE TEST WELL 1, ALASKA

Logged by Florence R. Collins

466290 O - 58 (In pocket)

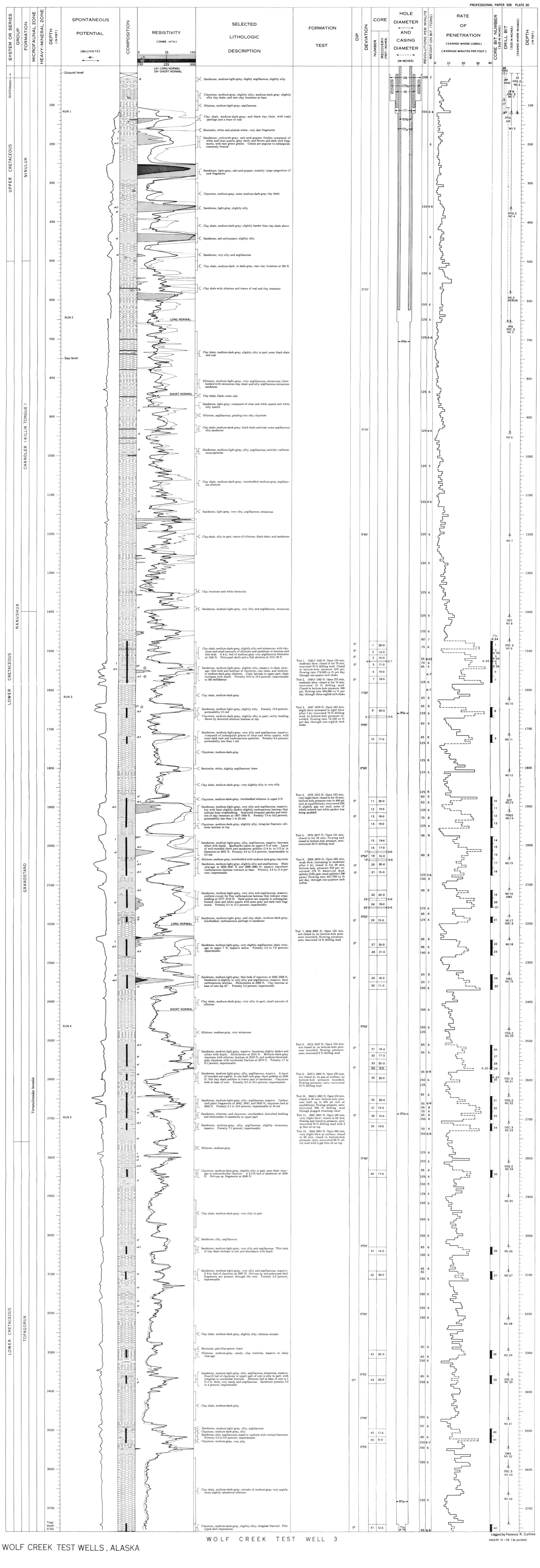


WOLF CREEK TEST WELL 1



WOLF CREEK TEST WELL 2

TEST WELL	LOCATION	ELEVATION	SPUDDED	COMPLETED	TOTAL DEPTH	STATUS
1	Lat 69°23'11" N Long 153°31'15" W	Derrick floor, 714 feet Ground, 712 feet	April 29, 1954	June 4, 1951	1500 feet	Junked and abandoned
2	Lat 69°24'17" N Long 153°31'15" W	Derrick floor, 443 feet Ground, 437 feet	June 6, 1951	July 1, 1951	1618 feet	Dry and abandoned
3	Lat 69°23'11" N Long 153°31'25" W	Kelly bushing, 750 feet Ground, 732 feet	August 20, 1952	November 3, 1952	3760 feet	Dry and abandoned



WOLF CREEK TEST WELL 3

GRAPHIC LOGS OF WOLF CREEK TEST WELLS, ALASKA

Logged by Florence R. Collins
466290 O - 58 (In pocket)

SYSTEM: CRETACEOUS — UPPER COLVILLE
GROUP: COLVILLE
FORMATION: PRINCE CREEK (KOGOSUKRUK TONGUE); SCHRADER BLUFF (SENTINEL HILL MEMBER)
MICROFAUNAL ZONE: *Eoeponidella strombodes*; Fractured garnet ?
HEAVY-MINERAL ZONE: garnet

DEPTH (IN FEET)	COMPOSITION	SELECTED LITHOLOGIC DESCRIPTION	DIP	DEVIATION	CORE NUMBER	CORE RECOVERY (FEET–INCHES)	HOLE DIAMETER AND CASING DIAMETER (IN INCHES)
	Ground level	Clay shale, medium-dark- to dark-gray; trace to 20 percent medium-light-gray clay shale; trace of coal					9⅞
		Bentonite, white; 10 percent					7
		Clay shale, medium-light to medium-dark gray; as much as 30 percent yellowish-brown clay ironstone		1°			6⅛
100		Clay shale, light- to medium-light-gray, bentonitic, soft to medium-hard; plant fragments and thin beds of coal	0°		1	8-0	
			0°		2	10-0	
	vf-ns	Sandstone, light-gray, medium-soft; grains subangular; 50 percent clear quartz with a little white quartz, 40 percent white mica; grades to siltstone	0°		3	8-0	
		Limestone, pale- to dark-yellowish-brown, very hard, dense	4°		4	6-0	
			4°		5	10-0	
	vf-f				6	10-0	
	Sea level				7	8-0	
200		Bentonite, very light-gray, argillaceous, soft but brittle	3°	1°45′	8	10-0	5⅞
		Clay shale, carbonaceous; with layers as much as 1 in. thick of medium-dark-gray to grayish-black lignite	2°		9	7-0	
	vf	Sandstone, light-gray, medium-soft; 75 percent white and clear quartz; also white mica and carbonaceous particles	2°		10	8-0	
		Claystone and clay shale, medium-light- to olive-gray	0°		11	10-0	
					12	9-0	
		Lignite and carbonaceous clay shale, dark-gray to grayish-black, medium-soft, brittle	1°		13	10-0	
300				1°45′	14	8-0	
	vf-f	Sandstone, light-gray, medium-soft to soft; fracture irregular; grains angular to subangular; grains made up of clear quartz with some white quartz; also white mica, black carbonaceous particles, volcanic glass shards, and other minerals; bentonitic matrix; rare carbonaceous plant fragments			15	10-0	
	f-m ns				16	10-0	
	f-m		3°		17	10-0	
					18	7-6	
		Claystone, light- to medium-gray, also light-olive-gray, medium-hard; irregular fracture; light-colored bentonitic laminae; some carbonaceous clay shale and lignite			19	10-0	
					20	10-0	
					21	9-0	
					22	8-6	
					23	10-0	
					24	10-0	
					25	10-0	
					26	10-0	
					27	9-0	
					28	9-0	
				2°15′	29	10-0	
400					30	10-0	
	f				31	8-0	
	m				32	10-0	
					33	10-0	
	vf-ns	Sandstone, medium-light-gray, silty, soft and friable; many carbonaceous partings and particles	4°		34	9-0	
			4°		35	10-0	
					36	7-6	
					37	8-0	
					38	10-0	
					39	9-0	
500		Claystone, light-olive-gray, and clay shale, medium-light- to medium-gray. A few beds of siltstone present. Pelecypod and gastropod fragments at 534 ft	3°	2°45′	40	10-0	
					41	8-0	
					42	10-0	
					43	9-0	
					44	9-0	
					45	10-0	
	f-m ns	Sandstone, light-gray, medium-soft and friable; grains angular to subangular; 60 percent white and clear quartz, 20 percent yellowish calcareous grains, 10 percent carbonaceous particles, and white mica, rock fragments; argillaceous matrix			46	10-0	
			0°-3°		47	10-0	
		Pelecypod fragment			48	9-0	
		Pelecypod fragment	0°		49	8-0	
		Pelecypod fragments; small pyrite nodules with brownish halos	2°	3°15′	50	10-0	
600		Bentonite, white and very light-gray, rather hard; contains biotite particles, some clay shale interbeds	1°30′		51	8-0	
	f-m				52	10-0	
	m				53	10-0	
	ns	Sandstone, light-gray, rather soft and friable except where calcareous; grains angular to subangular; 85 percent white and clear quartz; remainder is carbonaceous particles, various micas, rock fragments, and yellowish clayey particles; argillaceous matrix			54	10-0	
	vf-f				55	10-0	
	f				56	10-0	
	f-m				57	9-0	
					58	10-0	
					59	10-0	
700				3°	60	10-0	
		Siltstone, light-gray; medium-light-gray clay shale interbeds. White pelecypod fragments between 719 and 749 ft			61	10-0	
					62	7-6	
					63	10-0	
		Pyrite nodules, with brownish halos			64	9-6	
		Sandstone, light-gray, medium-soft and slightly friable; made up of subangular to angular quartz; also mica, carbonaceous particles, calcite grains, and rock fragments; bentonitic matrix	0°		65	4-6	
	vf-f ns				66	10-0	
					67	8-0	
		Pelecypod remains, white, very rare; pyrite nodules			68	10-0	
		Pelecypod shells, tiny and numerous	0°	3°45′	69	10-0	
800		Bentonite, light-gray and greenish-gray, thin layers			70	10-0	
					71	10-0	
		Pelecypod remains, rare, small			72	10-0	
		Bentonite, very light-gray to white, friable, soft to medium-soft; contains black carbonaceous plant fragments. Dull earthy to shiny black soft and brittle lignite and coal	0°		73	10-0	
					74	4-0	
					75	10-0	
					76	7-0	
		Sandstone and conglomerate, light-gray, hard; rounded gray and black chert pebbles as much as one-half inch in diameter	2°		77	10-0	
	f				78	10-0	
	m				79	8-6	
		Lignite and carbonaceous clay shale, medium-dark-gray to grayish-black; layers of brownish-gray and white bentonite. Claystone with scattered coaly laminae			80	4-0	
900					81	1-6	
		Siltstone, light-gray, massive, hard; slightly bentonitic matrix. Very light-yellowish-gray medium-hard bentonite	5°		82	10-0	
					83	8-0	
		Bentonite, light-gray and medium-light-olive-gray, in streaks			84	8-6	
					85	0-3	
	f	Sandstone, light-gray, medium-hard, slightly friable; 70 percent white and clear quartz, 10 percent carbonaceous particles; also mica, calcareous grains, and rock fragments; bentonitic matrix; rare carbonaceous partings	2°		86	6-0	
	ns			4°	87	7-0	
	vf-f				88	10-0	
					89	10-0	
					90	5-0	
1000			2°-4°		91	9-0	
	f-m	Sandstone, as above, medium-hard to hard; grains angular to subangular	4°		92	10-0	
	ns				93	10-0	
	f				94	10-0	
			2°		95	6-6	
					96	8-0	
	vf	Siltstone, very light-gray to light-gray, hard; good cleavage; very bentonitic matrix; some clay shale interbeds, rare very fine sandstone laminae; vermicular structures of clay in silt or silt in clay are as much as one-quarter inch long and one-sixteenth inch wide	2°		97	10-0	
					98	8-6	
					99	10-0	
					100	9-0	
1100					101	7-0	
					102	9-0	
					103	4-0	
		Claystone and clay shale, medium-light-gray, very silty, hard; poor cleavage; rare fish scales, pyritic plant (?) impressions; 3 in. of medium-light-gray very hard limestone at 1110 1/2 ft	0°		104	10-0	
			0°		105	5-0	
					106	10-0	
Total depth 1180		Siltstone, light-gray, sandy, very argillaceous, micaceous, carbonaceous, hard, bentonitic			107	2-0	
					108	6-0	

Logged by Florence M. Robinson

EXPLANATION

- Sandstone
- Conglomerate
- Silty sandstone
- Calcareous sandstone
- Siltstone
- Sandy siltstone
- Calcareous siltstone
- Clay shale or claystone
- Sandy clay shale or claystone
- Silty clay shale or claystone
- Calcareous clay shale or claystone
- Clay ironstone
- Coal or carbonaceous material
- Limestone
- Bentonite
- Cored interval

vf — Very fine grained
f — Fine grained
m — Medium grained
ns — No show

Location: Lat 69°36′57″ N.
Long 151°27′11″ W.
Elevation: Kelly bushing 209 feet
Ground est. 200 feet
Spudded: January 26, 1947
Completed: March 23, 1947
Total depth: 1180 feet
Status: Dry and abandoned

Drilling and engineering data compiled from records of Arctic Contractors

All depths are measured from the top of the kelly bushing

Colors were determined by comparison of dry samples with the National Research Council Rock Color Chart, 1948

5 0 - 59 (IN POCKET)

GRAPHIC LOG OF SENTINEL HILL CORE TEST 1

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

PROFESSIONAL PAPER 305 PLATE 32

GRAPHIC LOG OF FISH CREEK TEST WELL 1, ALASKA

Logged by Florence R. Collins

SYSTEM OR SERIES: PLEISTOCENE → | LOWER CRETACEOUS
GROUP: GUBIK | SEABEE | UPPER CRETACEOUS
FORMATION: BLUFF | COLVILLE
MICROFAUNAL ZONE: SCHRADER BLUFF, SENTINEL HILL MEMBER | TOPAGORUK
HEAVY-MINERAL ZONE: TILLUVAK TONGUE OF THE PRINCE CREEK | Prismatic tourmaline | *Virmosuthrodden borealis*

DEPTH (IN FEET)

SPONTANEOUS POTENTIAL (MILLIVOLTS) — 40 +

COMPOSITION

RESISTIVITY (OHMS m²/m)
SN = SHORT NORMAL
SHORT NORMAL AM = 18 INCHES
LONG NORMAL AM = 71 INCHES

SELECTED LITHOLOGIC DESCRIPTION

FORMATION TEST

DIP

DEVIATION

CORE — NUMBER / RECOVERY (FEET–INCHES)

HOLE DIAMETER ⟷ AND CASING DIAMETER ⟷ (IN INCHES)

RATE OF PENETRATION (DASHED WHERE CORED) AVERAGE MINUTES PER FOOT

CORE BIT NUMBER (SIZE IN INCHES)

DRILL BIT (SIZE IN INCHES) (DASHED WHERE REAMED)

RUN 1

Ground level
Sea level

Sand, light-yellowish-gray; well-rounded clear quartz grains, with some yellow and white grains. Rounded chert pebbles rare in lower part

Clay shale, light-gray

Volcanic shards, common to abundant to 620 ft; pyrite abundant to 270 ft. Carbonized plant material common to rare

Siltstone, light-gray and light-olive-gray, moderately indurated; with shaly cleavage. Volcanic shards, pyrite abundant

Pyrite, common to 400 ft

Sandstone, light-gray, friable, massive; sand grains are subangular clear and white quartz. Abundant volcanic shards

Siltstone, light-gray, friable; shaly cleavage. Abundant volcanic shards

Glauconite pellets, abundant to 600 ft

Radiolaria, rare to abundant to 1195 ft

Clay shale, light-gray, moderately indurated
Siltstone, medium- to light-gray. Volcanic shards, pyrite, carbonized plant fragments, and fishbone fragments

Limestone, dark-brown and light-gray

Claystone, medium-gray, slightly waxy; conchoidal fracture; pyritized organic remains. At 927 ft in a 1-in. bed of light-yellowish-gray bentonite; a 4-in. bed is at 931 ft

RUN 2

Clay shale, brownish- to medium-gray. One-quarter to 2-in. beds of yellowish-gray bentonite, pyritic, and fishbone fragments

Pyrite, abundant

Clay shale, light-gray, very silty, micaceous; slightly crossbedded sandstone laminae

Clay shale, light-gray, slightly micaceous; carbonaceous siltstone laminae

Clay shale, light- to medium-gray, slightly micaceous, carbonaceous, and crossbedded; interbedded with siltstone with shaly cleavage. Basal 10 in. is dark-gray, silty, carbonaceous clay shale

Sandstone, light-gray, argillaceous, slightly carbonaceous, friable; porosity 27.6 to 32.6 percent

Lignite, brownish-black, friable; one-half inch coal beds, 2-in. bentonite beds

Bentonite, yellowish-gray, argillaceous, interbedded. Carbonized plant fragments and brownish-black lignite

Sandstone, light- to medium-gray; angular grains of white quartz, some gray chert, and mica

Clay shale, light-gray, very silty and micaceous; with interbedded light-gray siltstone, and some one-quarter-inch beds of light-grayish-yellow calcareous well-indurated claystone

Clay shale, medium- to light-gray, very silty, slightly carbonaceous, very micaceous

Limestone, white to yellow

Limestone, blue-gray

RUN 3

Clay shale, light-gray, micaceous; with rare siltstone laminae

Limestone, bluish-gray, argillaceous, massive; with yellowish-gray laminae

Ammonite shell fragments, microscopic. *Inoceramus* prisms are rare to 2500 ft; biotite flakes are common to abundant below 2400 ft

Clay shale, light-gray, very silty and micaceous. Scattered flakes and films of carbonaceous material. Rare *Inoceramus* and ammonite shell fragments

Plant material, abundant, carbonized

Clay shale, medium-gray, carbonaceous, very micaceous. Abundant silty and carbonaceous laminae, and sandstone laminae at base

RUN 4

Siltstone and clay shale, light-gray except where oil stained, micaceous, rarely crossbedded, interbedded. Rare thin beds (less than 4 in. thick) of sandstone. A 1-ft 5-in. bed of sandstone at 2854 ft is very silty and argillaceous. Most beds from 2920 to 3060 ft are yellowish to dark brown from oil stain. Porosity 25 percent

Inoceramus sp. shell fragment

Siltstone, light-gray, slightly micaceous, shaly cleavage; grades into unit below

Limestone, bluish-gray, argillaceous, well-indurated

Siltstone, light-gray, slightly micaceous. *Inoceramus* sp. and pelecypod shell fragments present

Clay shale, medium- to light-gray; laminae and lenses of light-gray micaceous siltstone with shaly cleavage. Light-grayish-yellow clay-stone rare at base

Siltstone, light-gray; with rare laminae of medium-gray clay shale. Pelecypod shell and carbonaceous plant fragments at base

Inoceramus sp. fragments; in one-half-inch bed, with clay shale matrix

Clay shale, medium- to dark-gray, carbonaceous; interbedded with light-gray siltstone. Shell fragments rare

Test 1, 2925–3060 ft: Tester open 1 hr. Had steady blow of gas for 50 min, blow by heads for 16 min. Gas to surface in 15 min. Recovered 180 ft of heavy black slightly gas-cut oil, 380 ft of gassy oily mud

Top of side-tracked hole

Bottom of side-tracked hole

RUN 5

Clay shale, light- to medium-gray; with rare silty partings, flakes and films of carbonaceous material, and micaceous streaks

Clay shale, light- to medium-gray, slightly silty.

Clay shale, light- to medium-gray, very slightly micaceous. Rare light-gray siltstone, and clay shale laminae

Clay shale, light- to medium-gray, slightly silty and micaceous; a few siltstone laminae

Clay shale, medium- to light-gray, silty in part, micaceous; fissile in part. Light-gray micaceous siltstone laminae below 4344 ft

Clay shale, medium-gray, silty in part, micaceous; with poker chip cleavage

RUN 6

Clay shale, medium-gray; with poker chip cleavage

Clay shale, medium-gray; with poker chip cleavage

Clay shale, medium-dark-gray, slightly micaceous; good poker chip cleavage

Clay shale, as above

RUN 7

Interbedded clay shale, medium-dark-gray, micaceous, silty; with poker chip cleavage; and argillaceous siltstone; with shaly cleavage. Streaks of very fine-grained light-gray sandstone with a small amount of carbonaceous material are rare

Sandstone, light-gray, very argillaceous, well-indurated. Abundant black and brown carbonized plant remains on partings. Porosity 6.1 percent; permeability less than 5 md

Clay shale and siltstone as above, interbedded

Sandstone, light-gray, very silty and argillaceous, micaceous. Flakes of carbonaceous material. Porosity 7.7 percent

Clay shale and siltstone as above, interbedded

Clay shale, medium- to dark-gray, rarely slightly silty, slightly micaceous; with poker chip cleavage

Clay shale, medium-dark-gray, silty in part, micaceous; with poker chip cleavage. Siltstone laminae rare

RUN 8

Clay shale, as above

Siltstone, medium-dark-gray, micaceous, argillaceous; streaks of very fine-grained sandstone; shaly cleavage. Porosity 6.9–10.4 percent; permeability less than 5 md

Clay shale, dark-gray; a few thin beds and laminae of medium-gray sandy micaceous siltstone decreasing in thickness and abundance with depth

Clay shale, medium-dark-gray, slightly micaceous; poker chip cleavage. Laminae and thin beds of medium- to light-gray slightly sandy siltstone

Clay shale, medium-dark-gray, slightly micaceous, noncalcareous; lenticular laminae of light-gray siltstone, about 1 ft of neck contains laminae which are pinched off and folded; resembles marble. Some laminae above and below the distorted beds are undisturbed

Clay shale, medium-dark-gray, slightly micaceous; poker chip cleavage. Laminae and thin lenses of medium-gray siltstone

Clay shale, medium-dark-gray, as above

Clay shale, medium-dark-gray, slightly micaceous; with laminae of light-gray siltstone

Clay shale, siltstone laminae as above

TOTAL DEPTH 7020

Test 2, 5481–5585 ft: Unsuccessful because tester was partially plugged and retaining valve held open by shale chips

Test 3 and 4, 5480–5585 ft: Unsuccessful; packer failed to hold

Test 5, 6000–6060 ft: Unsuccessful; defective trip valve opened prematurely

EXPLANATION

- Gravel
- Sandstone
- Silty sandstone
- Calcareous sandstone
- Siltstone
- Sandy siltstone
- Calcareous siltstone
- Clay shale or claystone
- Sandy clay shale or claystone
- Silty clay shale or claystone
- Calcareous clay shale or claystone
- Coal or carbonaceous material
- Limestone
- Bentonite
- Tuff
- Glauconite
- Cored interval
- No samples recovered
- Oil show
- vf Very fine grained
- f Fine grained
- m Medium grained
- AM Electrode spacing

BIT SYMBOLS

DRILL BITS

- CBRK Crum Brainard rock
- G-4D Globe 4-way drag
- GWS Grant wall scraper
- HTC Hughes Tricone rock
- HM Reed HM
- RHO Reed hole opener
- RRK Reed rock
- SRK Security rock
- K-2 Smith K-2
- SMRK Smith rock

CORE BITS

- A-1R A-1R wire line, hard formation
- HC Hughes core

Location: Lat 70°19'15" N., Long 151°51'8" W.
Elevation: Kelly bushing 31.5 feet, Ground 16.5 feet
Spudded: May 17, 1949
Completed: September 4, 1949
Total depth: 7020 feet
Status: Pumped 10 barrels oil per day, plugged and abandoned

Drilling and engineering data compiled from records of Arctic Contractors

Electric log by Schlumberger Well Surveying Corporation

All depths are measured from the top of the kelly bushing

Colors were determined by comparison of dry samples with the National Research Council Rock Color Chart, 1948

463355 O - 59 (IN POCKET)